University
News

MONDAY, NOVEMBER 28, 1988 Rs. 2.50

From R to L : Dr. K.V.S. Kaushal, Minister for Agriculture, Uttar Pradesh, Shri S.S. Ahmad, Vice-Chancellor, Shri Sampson David, Cultural Officer, AIU and Dr. H.G. Singh at the inaugural function of the North Zone Youth Festival held at the C.S. Azad University of Agriculture & Technology, Kanpur.

PUNJAB AGRICULTURAL UNIVERSITY

ADMISSION NOTICE

Applications are invited for admission to Ph.D. programme in the following subjects for the academic session, 1988-89 commencing from 8th February, 1989.

College of Agriculture

Agronomy; Animal Science (Animal Breeding, Animal Nutrition, Animal Production Physiology, Livestock Production & Management); Extension Education; Entomology; Food Technology; Pomology; Vegetable Crops; Plant Breeding; Plant Pathology; Soil Sciences.

College of Basic Sciences & Humanities

Botany; Chemistry; Biochemistry; Economics; Sociology; Genetics; Statistics; Microbiology; Zoology; Business Administration.

College of Veterinary Science

Vety. Anatomy & Histology; Vety. Bacteriology and Virology; Vety. Surgery & Radiology; Vety. Medicine; Vety. Pharmacology : Vety. Parasitology; Vety. Pathology; Vety. Physiology.

College of Agricultural Engineering

Farm Power & Machinery; Soil and Water Engineering; Processing & Agricultural Structures; Electrical Engineering.

School of *Energy Studies in Agriculture*

Energy Science & Technology (in the field of Engineering, Microbiology, Biochemistry and Agricultural Economics).

College of Home Science

Foods & Nutrition

Minimum Qualifications at a Glance

(i) **For Inservice Candidates :** A grade point average of 3.20 (4.00 basis) or 50% marks at Master's level in the respective field and a grade point average of 2.00 (4.00 basis) or 40% marks at graduation level.

In *service candidates shall be an employee of PAU Punjab Government Union Territory of Chandigarh* having atleast 5 years service with three years service after getting Master's degree on the last date of receipt of application.

Inservice candidates securing a minimum of 50 marks or above according to the table in sub rule (iii) of Rule 17(b) of Admission Rules will be eligible for admission.

(ii) **For other than Inservice Candidates :** A grade point average of 3.40 (4.00 basis) or 60% marks at Master's level in the respective field and a grade point average of 2.00 (4.00 basis) or 50% marks at graduation level.

Note : (i) Please see Prospectus for the academic year, 1988-89 for detailed qualifications, reservation and fellowships, etc.

(ii) The candidates seeking admission to Ph.D. programme in **Agricultural Engineering** will have to appear for a qualifying examination except the candidates for Energy Science & Technology and Electrical Engineering in the major field of specialization Engineering Sciences and Mathematics at 9.30 A.M. in the College of Agricultural Engineering, PAU, Ludhiana in addition to the interview on the scheduled Date at 3.00 P.M. They should come prepared for qualifying examination and report to the Dean, College of Agricultural Engineering at 9.15 A.M. on 20.1.1989.

Prospectus and Application Forms : Available from the office of the Registrar, Punjab Agricultural University, Ludhiana on payment of Rs. 5/- per copy by cash at counter or by sending crossed Indian Postal Order(s) for Rs. 7/- payable to the Comptroller, Punjab Agricultural University at PAU Office, Ludhiana.

Last Date for Receipt of Applications : 20.12.1988.

Note : (iii) Only one application will be entertained for Ph.D. Programme on the basis of first preference of subject mentioned in the application form in the order of interview fixed below. Incomplete and without testimonials *applications are liable to be rejected.*

Interviews: Interviews will be held on the following dates, time and place mentioned against the subject :—

Subject	Date	Time	Place of Interview
Agronomy, Extension Education, Entomology, Plant Pathology, Food Technology	16.1.89	9.00 AM	Pal Auditorium Cemplex, PAU Ludhiana
Plant Breeding, Pomology, Vegetable Crops, Animal Sciences, Soils	17.1.89	9.00 AM	-do-
Botany, Chemistry, Biochemistry Business Administration	18.1.89	9.00 AM	-do-
Genetics, Zoology, Microbiology, Economics, Sociology, Statistics	19.1.89	9.00 AM	-do-
College of Home Science	20.1.89	9.00 AM	-do-
College of Vety. Science	20.1.89	10.00 AM	-do-
College of Agril. Engineering and Energy Science & Technology	20.1.89	3.00 PM	-do-

NOTE : No separate interview letter will be issued. No T.A./D.A. is admissible.

S.S Gill
REGISTRAR

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

A Question of Honesty

The Three Language Formula

Amrik Singh*

The three language formula was originally evolved by the Central Advisory Board of Education (CABE) in 1956. It was endorsed by the Chief Ministers in 1961. During this interval of half a decade, it became clear that while Hindi was being taught in some of the southern States, hardly any South Indian language was being taught in any of the northern States. Consequently, when the proposal came up for endorsement before the Chief Ministers, it was specifically mentioned that in respect of the northern States the three languages should include a South Indian language.

Described briefly, the formula puts the accent on (a) the regional language, (b) Hindi or English, and (c) another modern Indian language. In practice this arrangement has been sabotaged for almost a quarter century. The requirement of a modern Indian language (preferably from the South) was done away with in the North and, instead, Sanskrit was taught. In the South the formula was implemented much more honestly except in Tamil Nadu.

That State is not keen on Hindi. Formally speaking, Hindi was taught from the sixth to the eighth standard. But since there was no outside assessment, how seriously it was taught or otherwise could never be determined. The situation was described in the following words in the Programme of Action (POA) which was prepared a few months after the National Policy on Education (NPE) was adopted :

> The implementation of the three language formula has been less than satisfactory. The main deficiencies include the following : (a) all the languages are not being taught compulsorily at the secondary stage: (b) a classical language has been substituted for a modern Indian language in some States; (c) no provision exists for the teaching of South Indian languages for which the formula indicated a preference, in the Hindi speaking States; (d) duration for compulsory study of three languages varies; and (e) competency levels to be achieved by students in respect of each language have not been precisely specified.

In accordance with these recommendations, the CABE recently went into the question in further detail. Following its decision, the Central Board of Secondary Education (CBSE) has informed all institutions connected with it that, with effect from 1989, the arrangements would be described above. The other Boards in the country are expected to take similar follow-up action and, within the next few months, we should hear more about it.

In the case of Delhi, there is an additional factor, according to the Delhi Education Act, 1973, the three languages (Sanskrit in the case of most schools in Delhi) were to be taught up to the secondary level. In practice however, the third language (Sanskrit) was discontinued after the eighth class whereas it was required to be taught till the tenth class. There is currently a controversy between the Department of Education of Delhi Administration and the CBSE as to who is responsible for not continuing the third language after the eighth class. Regardless of this controversy, the fact remains that the provisions of the Act were not being followed and the latest decision seeks precisely to enforce the provisions of the Act.

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Even though the next academic session is several months away, controversy regarding the new provision has already erupted. Those who oppose this decision do it on the ground that this would hurt Sanskrit. One is not too sure that this would happen, particularly in view of the successful manner in which Maharashtra has combined the teaching of Marathi and Sanskrit in the ratio of 80:20.

Most Indian languages are either rooted in Sanskrit or have a close and integral relationship with it. Guided by this consideration, Maharashtra embarked upon this interesting experiment almost a decade ago. By all accounts, it has been a resounding success. Every student who learns Marathi also learns Sanskrit. Only the proportion of Sanskrit in the total workload is one fifth of what it would be had Sanskrit been taken as an independent subject. But in that case the number of those opting for Sanskrit would have been much smaller

Should this formula be applied to Delhi, instead of the 30,000 or so who now take Sanskrit in the tenth class, almost all students at that level. (approximately 1,50,000 in number), would be doing both Hindi and Sanskrit. Would this be better or worse than the existing situation ? This is a question that needs to be raised and answered.

Put another way, it is a question of making the right choices While the study of Sanskrit has been without question neglected in modern India, what needs to be asked is : *Should the study of Sanskrit be promoted at the cost of the modern Indian languages?* To pose the issue as if it were a choice between Sanskrit or its neglect would not be fair. The right question to ask is : Will this arrangement promote the cause of Hindi and other modern languages ?

As already stated, the whole issue has been handled dishonestly. In the North the issue was evaded in a devious way. In Tamil Nadu, students pretended to learn Hindi whereas in actual fact they were not doing so. While the letter of the law was complied with in Tamil Nadu, even that was defied in the North. *According to what the Chief Ministers had decided* the third language should have been one of the South Indian languages and not a classical language.

Considering the strains on the Indian polity, and the relative weakness, (not absence) of a feeling of a national solidarity, it is of the highest importance that the existing reservations and prejudices are overcome. But there is a price to be paid for it. Those in the Hindi speaking belt who prefer not to learn any one of the South Indian languages do not help the cause of Hindi or of national solidarity. If those in the South have to be encouraged to take to Hindi those in the North have to make a gesture of *accommodation. This is precisely what is sought to* be achieved in terms of the latest decision.

Who is opposed to these decisions ? One may be loosely described as the lobby of Sanskrit teachers. Once Sanskrit becomes only 20 per cent of the syllabus, some of them may lose their jobs. But this can be taken care of easily by taking an administrative decision that no one would be retrenched. On the positive side, if the number of those learning Sanskrit as a part of the regional language courses increases several fold as it should (it will increase five times in the case of Delhi) the fear of retrenchment may turn out to be unfounded.

The second source of opposition *is the revivalist* lobby. It is difficult to persuade them to see a different point of view, but the attempt need not be ruled out as something not worth undertaking. Once Sanskrit becomes an integral part of the study of each modern Indian language, as it can and may, (the Maharashtra experiment is a significant pointer), the situation can take a turn for the better rather than for the worse

As against these negative factors, it is important to refer to the role of those who can and ought to work for the enforcement of the new policy. One is to mobilise those, both within education and outside it, who believe that the modern Indian languages have not had as good a deal as they ought to have had. It is time they spoke out loudly rather than remained content with what is proposed to be done

Secondly, those who believe that the country needs much more of emotional solidarity than exists today should assert themselves. Their assertion should take the form of underlining the fact that according to the new arrangements resistance to the spread of Hindi is likely to decline in terms of the new arrangement and that would not be an inconsiderable gain. In fact the decision needs to be supported from this point of view alone.

It is the failure of Hindi to become acceptable all

(*Continued on page 4*)

Horizontal and Vertical Polylingualism

A Psychological Point of View

Maharaj Singh*

In our country, we have a wide spectrum of languages and therefore, we do have an opportunity to learn more than one language either at the same time (horizontally) or one after the other (vertically). In practice according to the three language formula proclaimed by our first Prime Minister, every child in school (public or private) throughout the country is supposed to learn three languages including his own mother tongue.

In such an enriched environment, we often wonder whether knowing more than one language is advantageous to our cognitive and mental development. Also, whether there exists any critical (optimum) age at which we should start learning the subsequent languages. Several studies have acknowledged the advantage of learning more than one language to our cognitive development (Vaid, 1982 for review). For example, the exposure to more than one language appears to accelerated awareness of the arbitrary relationship between sound and meaning (BenZeev, 1977a, b; Cummins, 1978; IncoWorral, 1972). This, in turn might lead a person to follow more analytic approach to language structure and have superior performance on sentence construction and on word-meaning task.

One important aspect of learning the second and subsequent languages pertains to the medium of instruction in which they are taught (or learned). Such a medium of instruction can either be the first or the same language which is being learned or taught. In case one chooses to learn the second language through its own medium of instruction the translation or correspondence between the two languages which automatically develops in our brain enriches our cognition However, in terms of the psychological theories of learning all that we learn through our experience, is the relationship between entities by association (Bindra, 1976). Thus, by associating the elements of the two or more languages and by making out various similarities and dissimilarities between the languages, we not only enrich our knowledge of the languages, but also enhance our cognitive and analytic abilities. Learning the second and subsequent languages through their own medium of instruction, however, seems to require more flexible brain and may be better suited for young children and in case of the horizontally learning the second (or the third...) language simultaneously along with the mother tongue.

Another method by which the second and the subsequent languages can be learned and taught is known as 'translation method'. This seems to be an easy approach and without going into the details of the language being learned or taught we often concentrate on the similarities and dissimilarities between the first and the second language. It is not always, however, possible to understand the particular language just by its correspondence to the other. Each and every language has developed in a unique way and has a profound impact of the time period, place and necessities of the people in its development. A particular language has, in short, a deep rooted cultural impact on its unique development. It is, therefore, very difficult to identify the correspondence between the languages. However, as we know, various languages do have several similarities. There are some languages which have been so intermixed that people whenever speak/write in one language often use the words of the other. In such cases it is very difficult to identify the extent to which the people are exposed to a language (or the languages) other than their first language.

The limited use of the elements of one or more languages in the primary language is called 'code-mixing (CM)'. CM as defined by Kachru (1978) refers to "the use of one language for consistent transfer of linguistic units from one language into the other, and by such language mixture developing a restricted or *not so restricted code of linguistic interaction.*" Such a code-mixing can easily be seen in Indian subcontinent where not only the Indian languages have a substantial code-mixing, but, English has also succeeded in occupying a highly prestigious position, specially in the urban setting (Kachru, 1969; Sridhar, 1977).

The age at which the secondary language be in-

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troduced is a very crucial factor. Researches have shown that children have more flexibility and therefore they tend to learn the Secondary language at much faster rate (though they also tend to forget sooner if the learned language is discontinued from being taught or used). Although there seems to be no clear evidence to suggest the most appropriate age at which the secondary language or languages be introduced, it must be as early as possible or at the most be up to the age of ten.

From a neurological point of view, the primary language in most right handed persons is processed in the left hemisphere. However, the secondary languages do not necessarily follow the similar pattern of laterlization. Also, it has been suggested that right hemisphere plays a greater role in processing the secondary language as compared to the processing of the primary language. It may be that by learning more than one language we are able to utilize our cognitive capacity to a greater extent.

.To conclude, it is suggested that we should encourage learning of the secondary languages and, if possible, through their own medium of instruction. Efforts should be made to develop the ability to keep languages separate so that mixture of two or more languages is avoided. If the prople can keep the individual languages separate, their knowledge of each one of the languages would be much more rich. The age of the secondary language introduction must be as early as possible. ☐

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A Question of Honesty

(*Continued from page 2*)

over the country which, to some extent, is responsible for the pre-eminent position of English today. English may continue to be studied for the wealth of knowledge that it contains. That is understandable. But that part of its popularity which derives from the non-acceptance of Hindi needs to be diluted. In plain words, while continuing to study English, let English not become a crutch on which we learn in order to discover a sense of unity among ourselves.

Unity achieved through the medium of English would mean the unity of the elite alone. What we need is the unity of the common people and not only of the elite. For that purpose Hindi ought to be accepted all over the country and, furthermore, such capabilities as are required for a growing and vibrant language in the modern world too should be developed. It is a tall order and several people would regard it as far from realistic or feasible. Those who think like this (and their number is not small) then, have an obligation to propose a better alternative. If anyone believes that the existing situation can continue indefinitely, it is time to re-examine our assumptions regarding the shape of our future polity and the nature and character of development for the country that is visualised.

For obvious reasons, the study of languages has been an emotive issue in our country. It is not going to be so easy to de-emotionalise it. When the three language formula was adopted, it was the outcome of mature and considered thinking. The difficulties inherent in the situation had been taken into account and it was then that a consensus was worked out.

The consensus, however, has not been acted upon all these decades. To now oppose the implementation of that consensus decision would amount to an attempt to reopen the issue. Once it is reopened, it can lead to all kinds of unpredictable consequences. Common sense as well as sanity require that we do not move in that slippery direction. ☐

SCIENCE AND SOCIETY

"However, the physical aspect of science is over-emphasised. Most discussions are centred round what science has or can do to improve our material comfort, and seldom ponder over how science influences one's view point, one's thinking," said Prof. K.L. Chopra, Director, Indian Institute of Technology, Kharagpur, while delivering Shri Rameshwar Tantia Memorial Lecture at Shri Jamnalal Bajaj Institute of Studies in Non-Violence, Peace Research Centre, Gujarat Vidyapith. "In the long run it is not the scientific theories or inventions which are of substantial value to a society but it is the scientific stand point inculcated in the members of a particular society. Science influences every aspect of society, it alters or modifies social institutions, ideas, values, literature and other tools of human interaction," he added. Excerpts

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Preamble

The last four decades have witnessed a major change in the image of science : what used to be an intense love affair of a dedicated, honest, curious, adventurous, non-conformist scientist with natural phenomena, has now evolved as a saleable, commercial business of vast and multifarious dimensions. The fact that science can service society and can be commercially exploited in the form of technological products, has transformed world societies significantly. Developing or developed, Eastern or Western, Capitalistic or Socialistic, Democratic or Dictatorial, the impact of Science and its applications, is discernible in all societies. Thus—science has come to be an integral part of society; the two must coexist. This lecture explores some aspects of their dynamic interaction. To begin with some basic concepts need to be established.

Basic Concepts

The word 'Science' comes from the Latin root 'Scire' meaning 'to know' or simply 'knowledge'. Eugene Rabinowitch defined science as "...a system of data and relationships covering vast areas of information derived from observation, analysis, and manipulation of natural phenomenon". Science, thus, deals with the expansion of our basic knowledge and the uncovering of rules of nature.

The word 'Technology', on the other hand, comes from the Greek root 'techne' meaning 'art' and has been often translated as the 'science of industrial art''. Technology is a complex process by which specialised knowledge is consciously applied to achieve a specific purpose. It consists of creating and changing things for well defined objectives. It is interesting to note the views of sociologists about technology. According to Lenski, technology refers to the informatives, techniques, and tools by means of which men utilize the material resources of their environment to satisfy their various needs and desires. In effect, it is a kind of cultural extension of the organic equipment with which we are endwed : our hands, our eyes, our ears, our legs and the rest. Like language, it is an essential element in every socio-cultural system, without which most human needs could not be satisfied.

Science is a particular activity and the result of that activity—science brings forth engineering via technology and in turn engineering and technology support and sustain it, both its educational and research aspects. Science connotes power while technology and engineering confer a direction to that power and thereby, influence society. Over the years, the reality of science has indeed become technology and it is only through the broad perspective of technology that the social consequences of science can be meaningfully discussed.

In its purest form, science plays the role of a visionary, and has humanity as its sole objectives. Science and human life are linked through a rather intimate though complicated pattern of interdependence and interaction : new techniques create new opportunities in a society; but making use of these opportunities, entails reorganisation of social beliefs and behaviour. In its concept, the intellectual enterprise of science is hardly any different from that of social philosophy, and the two areas of enquiry run parallel. Today, it is almost impossible to evaluate either science or society separately : what is society without science and what would be the relevance of science if society were not there to measure it. The preoccupation of this lecture then is to evaluate on the one hand the social impact of science and technology, and on the other the motivation and direction provided by society to the power of science.

Social Consequences of Science

Science is the single powerful force which can build or destroy society. Science affects the members of a society both physically and mentally : It affects their life style : and it affects their opinions.

By assuring better health and increased normal life expectancy, science promises man a substantial extension of his individual power and senses. Recent developments in pharmacology and neurophysiology offer possibilities of better quality of health and even a change in personality through controlled behaviour.

Science promotes inquisitiveness, it demands verification and is thus, a force in itself for the development of mind and brain of the members of a society. Is it possible to quantify the contribution of science in combating ignorance, superstition and obscurantism in a society like India ?

However, the physical aspect of science is over-emphasised. Most discussions are centred round what science has or can do to improve our material comfort, and seldom ponder over how science influences one's view point, one's thinking. In the long run it is not the scientific theories or inventions which are of substantial value to a society but it is the scientific stand point inculcated in the members of a particular society. Science influences every aspect of society, it alters or modifies social institutions, ideas, values, literature and other tools of human interaction.

In the present context science emerges as the foremost unifying factor in different social communities. Today the unity is not of history, culture or even religion but of knowledge, of the scientific stand point. Another major unifying factor is the ultimate dependence of different communities on each other. Scientific/technological research and its applications require vast amounts of resources and survival has come to depend an intelligent sharing of these resources. Science is monitoring the world towards an eventual global culture.

Science unites through its very conceptions, its stand point. The scientific stand point unites because it attempts to be truthful and hence impartial. In fact, science takes impartiality to its climax—if a good judge does not differentiate between Mr. X and Mr. Y, a good scientist does not differentiate between Mr. X and an earthworm. It is in this light that J.B.S. Haldane calls the scientific stand point as "God's-Eye-View" :

"In so far as it places all phenomena on the same emotional level the scientific point of view may be called the God's-eye-view."

Homonization and Harmonization of Science and Society

Of course, science-society relationship is not always positive. Science connotes "change" which is the only unchanging reality of any society. Now, any "change" is invariably accompanied by side effects, some of them may be inconvenient. It would appear that individuals are out of harmony with the technical order they have created themselves : the ultra-rapid changes caused by technological advancement have led to ethical and emotional dilemmas. Many social psychologists insist that a fundamental disparity exists between modern technology dominated societies and individual aspirations for security and stability.

In the present social context, science faces serious accusations. Indeed, at the very moment when science can boast of improving human condition, why is that man feels alienated, insecure and overwhelmed by the presence of his mechanical slaves, the discrepancy between technological change and the moral and ethical values leads to confusion and, more than ever before the fundamentals of society and sense of human activities are being challenged.

Science is considered to be the root cause of many ills in the society. Some of them engaging the attention of the World Community are :

- Accumulation of means of warfare, in particular the menace of nuclear destruction.
- Causing ecological and environmental imbalance through pollution and detrimental technologies.
- Depletion of natural resources through imprudent plundering of nature.
- Increased dependence on technology leading to subtle and continual erosion of human selfhood, subjectivity and traditional qualitative values.
- Surrender of scientists and technologists to political system and their obligation to meet its needs coupled with an increasing tendency on the part of the scientists, technologists and technocrats to seek power.

But, obviously, these negative aspects of which science is often accused are not actually inherent in science or technology, but in the objectives for which science and technology are used. Besides, science alone can cure the ills of science. Most scientists and

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AUTONOMY IN ACTION

The article on AVC College, Mannampandal, Mayiladuturai in our series on 'Autonomy in Action' and published in 21st November, 1988 issue of University News was authored by the Principal of the College Shri R. Balasubramanian. The omission of the byline in the article is deeply regretted.

technologists, as also politicians and economists, favour the idea that more scientific research is required to counter the negative side effects of scientific discoveries. Scientists alone can find the solution to the problems created by them.

Once exposed, societies all over the world—including developing or underdeveloped—are fascinated and hooked onto science—small or big, and technology—low or high. Clearly, therefore, irreversible changes are being brought about by the interaction of science with society. What is called for is homonization and harmonization of science and society. It is no more a question of what science has done for society, or society has done for science. It is a question of how the twins harmonize to benefit the mankind.

Science Versus Society Versus Socio-Economic System

The progress or the advancement of any society is in fact a measure of the presence of science in that particular society. What is the difference between U.S.A. and India in terms of progress or development. Is it not merely the application of technology prevalent in day to day life in these two countries ? For that matter what is the difference between Bombay and Saharanpur or a remote village in Bihar ? The advancement of a country, of a particular society, depends on the modernity of the technology used by it.

Technological advances have changed the basic fabric of society. Today, the status of the scientist (as builders or destroyers) is being recognised the world over. Both in the U.S.A. and the U.S.S.R., the capitalist and the labour class have slipped from the position of primary importance. The priviledged class of today comprises members of science academies, builders and technocrats from the industrial units. The same goes for India where the technocrats are steadily gaining ground, at least in planning, if not execution.

However, the impact of science is not uniform on all societies as is evident from the fact that the science-society interaction manifests itself differently in different countries. The kinds of changes that take place in a particular society depend on the conditions, conventions, traditions and values of that particular society. Different societies have evolved differently under the ever-increasing impact of science and technology.

The synergetic interaction between science, technology and society depends on cultural, social, socio-economic, socio-political background of the particular society. This point is best illustrated by taking up the examples of three culturally different socio-economic systems of Japan, U.S.A. and U.S.S.R. Having suffered a humiliating defeat in the Second World War, the nation of proud, intensely patriotic, and dedicated Japanese have cultivated science and technology as a national product with such zeal and success that, within a few decades, Japan has become one of the richest and powerful technology nation. Despite their robot-like obedience and commitment, the Japanese society has preserved its cultural background. The socio-economic system has emerged to be capitalistic as far as the international dealings are concerned. Yet, as a society, Japanese down to every individual, are first committed to the State, then to the private companies they work for and lastly, to themselves. Thus, it is a queer mixture of capitalism and nationalism fueled by the export-oriented products of science and technology which sustain the nation.

In contrast to the Japanese society, the Americans have maintained their individualism and their intense desire and skills for translating science and technology. Their innovative and entrepreneurial spirit have made the United States of America the most powerful and richest technological leader of the free world. Their desire to fight communism has also helped to transform the concept of science and technology in the U.S.A. The undaunted spirit of enquiry by individualists in the society has been responsible for the growth of science for the sake of science. Thus, although society is taxed heavily to fuel the defence-oriented S and T, the innovative American continues to make individual contributions to science and society. The commercialization of science has had its effects on the breaking up of the society into individuals rather than socially and culturally united groups which formed America of the earliar days.

Science and Technology in the U.S.S.R. has grown on the basis that communism and science go hand in hand and derive strength from each other. This basis has become entrenched because of the need to propagate international communism in the face of the menacing capitalistic societies of the West. It is, therefore, not the society but the state which has controlled the development of science and technology in the U.S.S.R. Despite being "Slavish" to the system, the passive society has produced some of the finest scientists, partly because of the intense desire to be counted in the world community and partly because of the immense prestige, power and *privileges given to the scientists* and technologists in the U.S.S.R. Here is an example when political views of the state determine the future evolution of both science and society.

Science and the Indian Society

The composition of the Indian society is such that most of the social theories applicable to the West and the East break down here. On the social plane, India has special problems which defeat all socio-economic doctrines. In India our cultural, religious, linguistic and caste loyalties serve as emotional stimulus to disregard collective or national interest.

Over the years, independent Indian has realised the need and the value of scientific development. The fact is evident from the expenditure figures : in the first five year plan, Rs. 20 crores were allocated for science and technology; for the seventh five year plan something like Rs. 7,500 crores have been set aside for the development of S & T. Today, nearly 1% of the GNP is being spent on development of Science & Technology. Here it is pertinent to quote verbatim a part of the 1958 Government of India Scientific Policy Resolution "...... The dominating feature of the contemporary world is the *intense* cultivation of science on a large scale, and its application to meet a country's requirements. It is this, which, for the first time in man's history, has given to the common man in countries advanced in science, a standard of living and social and cultural amenities, which were once confined to a very small privileged minority of the population. Science has led to the growth and diffusion of culture to an extent never possible before. It has not only radically altered man's material environment, but, what is of still *deeper significance, it has provided* new tools of thought and has extended man's mental horizon. It has thus influenced even the basic values of life, and given to civilization a new vitality and a new dynamism.

It is only through the scientific approach and method and the use of scientific knowledge that reasonable material and cultural amenities and services can be provided *for every member* of the community, and it is out of a recognition of this possibility that the idea of a welfare state has grown. It is characteristic of the present world that the progress towards the practical realisation of a welfare state differs widely from country to country in direct relation to the extent of industrialisation and the effort and resources applied in the pursuit of science."

While dealing with the impact of science (via Engineering and Technology) on Indian society, it is necessary to consider both its quantitative and qualitative aspects *in relation to the two main types* of societies that we have : the urban and the rural.

The impact of technological progress in urban India is clearly different from that in rural India. If in urban India, science has made its mark (to some extent) both in terms of improved lifestyle and adoption of scientific stand-point; in rural India, which counts for 80% of India, science has yet to fulfil its promise.

If a close study of the impact of science on Indian society reveals a somewhat unsatisfactory picture, it is basically due to deficiences or mismanagement in these vital areas: the education system; the rural development programmes.

Science and Rural India

It is a fact that even today, at the close of the twentieth century, science has failed to get assimilated in the social thought specially in rural India—an average Indian citizen views science as something outside his intellectual capacities and social pre-occupations.

As mentioned earlier, the advancement of a community is measured by the presence of science *in that community*. If India is still listed as an underdeveloped country, it is because the common Indian citizen is yet to be touched by the spell-casting wand of science.

Indian rural community has special problems. In spite of several handicaps (limited holding, poor resources, little risk-taking capacity and illiteracy), the Indian farmer today is not only in awe of this modern Messiah, but is also quite ready to be led by it. But, the needs of this vast majority must become a primary concern, if science in India is to emerge as a *potential social reformer* and to fulfil its promise.

If one analyses the cost/benefit ratio of the efforts put in by various R and D agencies in the context of country's socio-economic development (as measured by economic and social indicators), one has to regretfully come to the conclusion that the results are far from satisfactory. It is, therefore, imperative that a change in the direction of our scientific and technological efforts takes place : from high technology areas towards more relevant area related to rural population.

There is a lack of identification of the precise role of science and technology in rural development.

In order to achieve this identification/definition, scientists and technologists need to be used for extended periods in rural and forest areas and to get direct feed back from target rural population as well as from the administrative machinery at the district and panchayat level. Scientific agriculture has to form the core of rural development and must be supported appropriately. The people appointed for this job should have the required motivation and conviction as regards the pioneering role of science and technology in rural development.

Indeed, there is a need to establish several centres in India for continuously identifying and analysing problems in rural and backward areas where science and technology could play a significant role in finding economically attractive solutions. Interaction is required to be established between scientists and technologists on the one hand and between State government and district level field staff on the other. There is no doubt that for rural development, an integrated approach is needed with planning from bottom upwards instead of the reverse direction

Although there is an aura of self reliance in many fields, yet science in India has failed to provide satisfactory support to rural development. In India, we need to put high technology, which is usually synonymous with sophisticated industry, modern offices and well-equipped labs, to use in finding solutions for pressing social deficiencies (such as drinking water, vaccinations, illiteracy, transportation and telecommunication), which need immediate attention and demand highly creative and innovative efforts.

Education and Research

Science and education are inseparable : science depends on education and education depends on science for its basic tools. The two have always supported and fortified each other. But, now, it would appear that the two are not keeping pace with each other : science is advancing much too rapidly and the education system is unable to mould itself with the same agility. In other words, in the present context science is supporting education much more effectively than the other way around. In India, the lacunae in areas of mass education and higher education, have hampered effective support to the growth and applications of science. With the inception of educational technology, science has not only redefined the philosophy of education, but is in the process of reorienting the entire learning-teaching process

Our education system is full of contradictions. On the one hand there is a high percentage of illiteracy and on the other we count for one third of trained scientific manpower in the world. Both these sectors of society have so far failed (for different reasons) to contribute effectively towards social advancement. Actually there is a lack of communication and interaction between both these sectors of populations, each working on their own and existing in their own particular environments.

Certainly, the higher education system needs to be reoriented towards social relevance. Despite spectacular industrial growth, even today, studies in higher technology are dependent on foreign aid both in terms of books, instruments and even concepts. One of the reasons why Indian students feel that science is really not yet Indian is that we continue to read books written by western scientists and we continue to use instruments produced by these countries. It is important that our young students get a feeling of self-confidence by studying books written by eminent Indian scientists and by using indigenous scientific instruments and machinery. Another neglected area from the point of view of confidence building is that of indigenous research journals of high quality.

Although India's contributions in the fields of science and technology in the world has been substantial, it is a fact that in India, there is a lack of adequate facilities to fully harness the potentialities of young students. Though we have a large number of educated unemployed, there is a lack of skilled engineers, doctors and scientists in many areas. We need to make sure that education planners and manpower planners work together to avoid such mismatches.

There are also mismatches in the programmes taught in our institutes of higher technology, and actual needs of the nation. We train people for sophisticated industry, while most of our industry is not so advanced. Once students go abroad for specialisation, they do not find a suitable slot back home where they can adjust and make use of their knowledge.

Of course, it would be ideal if the infrastructure is so designed that the young people who have the privilege of undergoing higher education at considerable national cost, are in a position not only to find productive self-employment, but while doing so, also create job situations for some ten times the number who do not have the benefit of higher education.

Concluding Remarks

(i) Can India hope for a science based society ? The answer has to be emphatically Yes; there is no alternative. But, efforts have to be made to generate social synergy and the

(*Continued on page 16*)

STUDENTS WELFARE FUND

The Uttar Pradesh Government is reported to have created a students welfare fund with an amount of Rs. 5 crore to provide scholarships to brilliant and talented students and also to promote welfare of students.

According to the guidelines finalised recently, the scholarships to be given from the interest of the fund created for the purpose would be given to students who had obtained a minimum of 60 per cent marks provided the guardian's annual income does not exceed Rs. 2500/-. Students of universities, degree colleges, engineering or agriculture engineering or medical colleges studying in degree classes will be entitled for a scholarship of Rs. 90 per month and those in postgraduate classes will be given a monthly scholarship of Rs 120. The students in engineering colleges, medical colleges and agriculture engineering would be entitled for a scholarship ranging from Rs. 120 to Rs. 150 per month. Students in technical institutions will also be provided scholarship facility of Rs. 75 per month.

The scheme also covers meritorious students of intermediate and high school classes and the quantum of scholarship to be given to them would be Rs. 60 and Rs 40 per month respectively. Special attention in providing scholarship at this level would be given to girl students. The scheme would also be applicable to students of senior basic schools studying between class VI and class VIII provided the income of guardians does not exceed Rs. 1,200 a year. The quantum of scholarship for the students of senior basic schools would be Rs. 25 per month.

For research scholars, an amount of Rs. 2,000 would be provided in one instalment. The scheme also provides facilities of financial help for talented boys and girls in sports who would also be provided financial assistance between Rs. 2,000 and Rs. 5,000/- in one instalment.

JNU Launches Computer Appreciation Programme

As part of the year-long programme of the Nehru Centenary Celebrations, the Jawaharlal Nehru University (JNU) has launched a Computer Appreciation Programme for students of Delhi schools which do not have computer teaching facilities. The JNU Vice-Chancellor, Prof. M. S. Agwani inaugurated the programme in the Government High School, Bijwasan, a Village near Delhi. Under the programme, lectures and demonstrations shall be organised by the faculty members of the School of Computer and Systems Sciences at JNU with a view to inculcating in the students an awareness about application of computer technology in day to day life.

While launching the programme, the Vice-Chancellor said that the best way to pay tributes to Pt. Nehru was to follow the path shown by the great visionary. He said that computer technology is developing at a very fast pace. It is, therefore, necessary that adequate training should be imparted among students to enable the coming generation to cope with the changing times.

The school at Bijwasan with 1100 students caters to the needs of 25 villages.

It is planned to cover one new School every month during the year long celebrations.

JNU also proposes to organise a short-term training course for the teachers of the schools during summer vacations when facilities would be provided to them to undergo training for about two/three weeks about the theory and practice of computers.

Making the UGC More Effective

The Administrative Staff College of India (ASCI), Hyderabad, it is reported, will make a comprehensive study of the internal management system and functioning of the UGC.

The study will also examine aspects like manpower planning, information system, and computerisation in the organisation. The ASCI will study the roles of key functionaries of the UGC and how the UGC can be made more effective in the context of the expectations of the universities in the country. For this purpose, a sample of a few universities of all hues—Central, State and Deemed—is to be taken and their views assessed.

News from Agril. Varsities

New Wheat Variety

The Indian Council of Agricultural Research (ICAR) has contributed to the development of a new high-yielding wheat strain—Veery, a spring bread wheat—capable of producing 10 per cent more grains than the "miracle" varieties that kicked off the green revolution of the 1970s. Developed at the Mexico-based International Maize and Wheat Improvement Centre (CIMMYT) out of the combination of spring wheat of India and winter wheat of Canada, Veery shows resistance to the diseases and environmental stresses often found in developing countries.

For its research accomplishment, which has once again led to breaking the wheat-yield barrier, CIMMYT got the Consultative Group on International Agriculture Research (CGIAR)'s King Boudouin award which it will share with 12 other International Agricultural Research Centres, including ICAR.

Veery has different names in different third world countries. Farmers call it Rusape in Zimbabwe, Numidie in Algeria, Dashen in Ethopia, Glennson in Mexico, Pak 81 in Pakistan, Olintepeque in Guatemala and by more than a dozen other names in other countries.

The new wheat line is now grown in on more than four million hectares worldwide. Veery line has also been used to produce locally adapted lines in over 25 countries and five continents. The area planted to Veery-based varieties will increase dramatically as seed becomes more readily available to farmers, according to CIMMYT scientists.

Many of the key traits in addition to yield, that have made the Veery wheat so popular with farmers can be traced to the winter wheat parents. These include improved resistance to two diseases of wheat, stripe rust and powdery mildew as well as some resistance to septoria diseases and leaf rust and superior tolerance to environmental stresses such as cold, excessive heat and drought. Other important traits of the Veery wheats are their efficient use of scarce inputs in low-input environments and their ability to *respond exceptionally* well as production improve.

The Veery wheat line originally resulted from an initial cross of Russian winter wheat, Kavkaz and a Mexican sprint wheat, Buho, in 1973. *After further crossing and* seven generations of testing at two sites in Mexico, the line was given a breeding name, Veery.

Sports News

Fellowships for Sports Research

The Sports Authority of India (SAI) has decided to give 10 fellowships of Rs. 20,000 each every year for initiating more experts in research work in different fields of sports sciences. Besides this, another Rs. 10,000 will be given as contingency grant to meet actual expenses on research, especially in the fields of sports nutrition, sports physiology, sports psychology and sports injuries. This will be in addition to separate project grants to be given by the SAI to institutions which undertake research projects in sports sciences.

The objective of the scheme is to involve sports scientists in the better development of sports by application of modern sciences and technology in sports training. The main stress will be on devising physical, physiological, psychological and medical evaluation tests for selected athletes, role of indigenous medicines in athletic training without violating doping regulations of the International Olympic Committee, sports anthropemetric studies, including genetic studies which have a bearing on the selection criteria of athletes, balanced diet and pre-competition diet for sportspersons based on Indian conditions and availability of diet, pattern and incidence of sports injuries prevalent in different games and in different parts of the country and research to devise correct sports apparel, shoes, etc.

The SAI has earmarked a sum of Rs. 4.25 lakh for this scheme this year.

Meanwhile, the SAI has also planned to spend about Rs. 9 lakh on promotion of indigenous games and material arts to preserve long-term traditions and cultural heritage of a particular region, notwithstanding the fact that these indigenous games and martial arts may not give any talent for modern games.

The SAI also proposes to offer special prizes and scholarships for writing books on indigenous sports and martial arts. The State Sports Councils and the State and national associations of indigenous games would be asked to conduct tournaments, demonstrations and seminars. The SAI has also planned to assist the Ladakh polo festival to be held during 1988-89.

In order to encourage mass participation of people in fitness and sports programmes, the SAI has decided to hold 27 national physical fitness festivals in different parts of the country during the National Physical Fitness Week to be observed from December 7 to 13 this year.

The SAI has earmarked a sum of Rs. 90 lakh for various national physical fitness schemes, including the conduct of sponsored races, setting up of jogging clubs and national level Bharatiyam. The SAI has planned to organise 100 sponsored races in different parts of the country this year and will provide an aid of Rs. 5000 to each race.

The Bharatiyam mass sports programme is on the lines of the Spartakiad of East European countries and it will include different activities as mass formations, callisthenics, rhythmic gymnastics, kalarlpayattu tanta, lezim, acrobatics, pyramids, yoga, free play, rope mallkhamb, pole exercise and display of skills of games and sports.

Instt of Physical Education & Sports Sciences

The Indira Gandhi Institute of Physical Education and Sports Sciences, set up under the auspices of the University of Delhi by Delhi Administration, aims to provide scientific training and coaching facilities to potential sports performers and *prepare professional* leaders in Physical Education, Health Education and Sports. The main emphasis of the Institute is :

- To provide a platform for potential sportsmen towards development of their talents for higher levels of performance through scientific means.
- To prepare competent leaders for Recreation/Heath Clubs and *other leisure time activities.*
- To train leaders for good social and human living with technical skills of man-management and human behaviour.
- To further the concept of 'Sports for All' and promote research in this direction so as to give a *new dimension to* the concept of fitness in the context of modern scientific society.
- To encourage participation in sports for balanced development of the body and attainment of general physical fitness.
- To realise the emphasis laid by the current National policies of Education and Sports in considering Physical Education and Sports as an integral part of the curriculum of schools and colleges.
- To cater for professional and academic *leadership* to the institutions of Physical Education and Sports Sciences in the country.

It is visualised that the Institute would serve as :

- Centre for documentation and mobilization of resources in the field of Physical/Health Education and Sports.
- Data Bank for all current and previous activities related to Physical Education and Sports in order to promote research in this field.
- Platform for organising professional seminars, conferences, workshops, clinics and competitions.
- Resource Bank for all activities related to Physical Education and Sports Sciences.
- Centre for co-ordination at international level in the implementation of policies and projects related to Physical Education ond Sports.
- *Society for publication of* literature on Physical/Health Education and Sports.

At present the Institute affers a 3-years Degree Course known as BSc (Physical Education, Health Education and Sports). Subject to the approval of the University of Delhi, the Institute proposes to introduce the following courses :

Master of Sports Sciences (Regular Courses of 2 years duration): Post Graduate Diploma in Health Education (1 Year); *Master* of Physical Education (Summer Course—3 Semesters); Post Graduate Diploma in Physical Fitness and Adventurous Sports (1 Year); Post Graduate Diploma in Officiating and Coaching (1 Year); Diploma in Sports Jounalism (3 Months); Diploma in Sports Management and Protocol (3 Months); Certificate Course in adapted Physical Education—*Exercise Therapy, Rehabilitation*, Postural Defects (6 Weeks); *Certificate* Course in Sports Psychology (6 Weeks); Certificate Course in Bio-mechanics of Sports Kinesiology (6 Weeks); Certificate Course in Sports Physiotherapy (6 Weeks); Certificate Course in Kin-Anthropometry (6 Weeks); Certificate Course in Health Education and First-Aid (6 Weeks); Certificate Course in Measurement, Statistics and Evaluation in Physical Education and Sports (6 Weeks) Certificate Course in Exercise Physiology (6 Weeks); Certificate Course in Sports Nutrition (6 Weeks), Certificate Course in Weight Training (6 Weeks); Certificate Course in Sports Officiating and Interpretation (6 Weeks); Certificate Coerse in Soil Treatment and Marking of Play fields (6 Weeks); *Certificate Course in* Physical Fitness (5 Weeks); Certificate Course in Sports Photography and Presentation (6 Weeks); & Certificate Course in Sports Reviews and Commentaries (6 Weeks).

News from UGC

INSAT-1B Progrmme of UGC

Between 12th December to 20th Dec., 1988 the following schedule of telecast on higher education through INSAT-1B under the auspices of the University Grants Commission will be observed. The programme is of one hour duration every day from 12.45 p.m. to 1.45 p.m. (Repeated from 4 p.m. to 5 p.m.) and will be available on the TV Network throughout the country. For the viewers in Delhi and surrounding areas these programmes can be seen on the second channel.

12.12.88

"Principles of Phase Stability"
"Small Scale Industry—II"

13.12.88

"A Case for Distance Education"
"Ayurveda Series—IV Sushruta & Surgery"

14.12.88

"Aerodynamics—Basic Theory of Flight"
"Nagaland"
"Nervous System in Man"

15.12.88

"Signals—II"
"Skylab : Outpost in Space"
"Understanding Poetry—II"

16.12.88

"Mister Klein Looks at Geometry"
"An Interview with Prof. A. Howish : Inter Planetary Disturbances—II"
"Clean Air—Healthy Living"

17.12.88

"Indian Stick Fighting—I"
"James Whistler : Etchings"
"An Insult to Civilization"

18.12.88

No Telecast

19.12.88

"The Heart of the Atom"
"Time Management : The Edge of Success"
"Orchids of Sikkim"

20.12.88

"Laser in Welding—I"
"World of Communication—Basic System Functions & Conversions"
"Pancha Karma—I : Purakvarma"

News from Abroad

Climate as the Common Heritage of Mankind

There is perhaps no stronger factor than climate which determines the global physical well-being of the peoples of the world in that it affects not only their health but the very means of their sustenance. That global climate and weather should, therefore, be declared part of the common heritage is a measure which fully falls in line with the UNESCO project on the rights of future generations to their environment, and on inter-generational responsibilities thereon.

The project, introduced by Dr. Salvino Busuttil, Director General, Foundation for International Studies at the University of Malta, at UNESCO seven years ago, aims at creating a global awareness of the common heritage which is to be bequeathed to future generations. It covers those resources which by their nature cannot and should not be appropriated by any one nation but should be harnessed and developed for the benefit of all men. They relate not only to seabed resources which will be fully protected, when the U.N. Convention of the Law of the Sea is ratified, but also to outer-space and Antartica, as well as to genetic engineering in all its manifestations. Ultimately, common heritage rests on the accumulated knowledge and culture of mankind, and the corpus of scientific and technological progress is part of the collective patrimony of our species, a guarantee of its unity and a condition of its continuity.

Regional meetings have been held in Latin America and in Asia; one is planned in Africa for next year followed by another one, for Europe and North America in 1990. It is hoped that by 1991, enough progress will have been registered to call, under U.N. auspices, a world conference which will affirm the right of future generations to their environment and put into place a supra-national mechanism to protect those rights through the development of resources for that common good emanating from the first legacy of Nature's master.

CHANDROTSAV—88

A four-day Inter Varsity North Zone Youth Festival was held at Chandra Shekher Azad University of Agriculture & Technology, Kanpur from November 13-16, 1988. The Youth Festival, dedicated to great patriot, Chandra Shekhar Azad, was attended by about 650 delegates from 21 North Zone Universities.

The Festival was inaugurated by Dr. Krishna Vir Singh Kaushal, Minister for Agriculture, U.P., who took the salute at the march past by the participating contingents. A colourful Folk Dance, sponsored by the U.P. Directorate of Cultural Affairs was presented on the occasion. The Chief Guest commended the efforts of the AIU and the Department of Youth Affairs & Sports in promoting the concept of the Inter University Youth Festivals. He mentioned that such Meets undoubtedly make the exuberant youth aware of the rich culture of all regions, communities and tribes of our vast land.

The competitive events commenced with the most fascinating item of the festival, namely, Folk Dances. The Holi Folk Dance by Haryana Agricultural University, Hisar was highly acclaimed. It will be recalled that the same contingent with the same item had won the National Award in 1986 and was sent to the Soviet Union to partipate in the Festival of India in the USSR in 1987. The Eolk dancers of C.S. Azad University of Agriculture & Technology, Kanpur performed 'Rass' peculiar of Brij, Bhangra, Haryanvi, Kashmiri, Himachali and other regional dances. Both these dances were declared the best two by the judges.

A closed circut TV system provided facility of viewing to large number of people who could not be accommodated in Auditorium.

Classical Dance Event that followed the Folk Dances, was inaugurated by the great Kathak Wizard Birju Maharaj. The Classical Dances, as performed by the upcoming artists were not of as high a standard as expected, yet participants of Punjabi University, Patiala who presented in Jaipur Gharana style and that of Agra University who presented in Lucknow Gharana style made some impact on the audience. Both these participants were adjudged as the best two.

Classical Vocal Solo, Instrumental music, Painting and Quiz items were organised on the second day. Kailash Auditorium echoed with the rich Indian raagas reminding nostalgically of the days of Bade Ghulam Ali Khan, Amir Khan and Paluskar. Female voices dominated most of the show as Sunita Pandey, C.S. Azad University of Agrl. & Tech. (*Mia Ki Tori*) and Nivedita Uppal, Punjabi University, Patiala (Bada Khayal, Chhota Khayal) enthralled the audience with romantic nuances.

Classical percussion and non-percussion events were held at the same venue. Guru Nanak Dev University, Amritsar and University of Jammu, Jammu exhibited delightful tabla performance and caught the eyes of judges for obtaining the best two positions. In the non-percussion event, Sitar was heavily used by the participants which made the event a bit monotonous. However, Arvind Masiah, Agra University and Nirja Sharma, Punjabi University left indelible impression of their artistry. They were declared as the best two for this event.

In the Quiz preliminary round thirteen universities took part, which were required to answer thirty questions for the final round. Four universities that qualified for the final contest were Aligarh Muslim University, Agra University, C.S. Azad Univ. of Agriculture & Technology and Kanpur University. Dr. Rizvi conducted the contest for the final round in which Agra and Aligrah Universities claimed the first two positions.

A lively Group Discussion was held in honour of Pt. Jawaharlal Nehru, the late Prime Minister of India, whose birth centenary is being observed throughout the country. The topic was—"Nehru: Architect of Modern India". The speaker brought to light many facets of Nehru's life in impressive manner. The day coincided with the birthday of Paditji.

The Light Vocal items comprising Geets, Bhajans and Ghazals were rendered mellifluously. It started with a bhajan by Ritika Mehrotra of Lucknow Unversity—'Nache Nandlal Nachave Baki Maiyya'. Ku. Sunita Pandey, C.S. Azad, presented the song—'Geet mere kya sunega chand'. But Nivedita Uppal, Punjabi University, Patiala and Vishu Bhatnagar, Maharashi Dayanand University, Rohtak spell bound the audience with their enthralling pieces resulting in their selection as the best two.

Group songs were held during the evening and proved a big treat for the audience The event commenced with Kashmir University presenting a sweet song in Dogri language. The theme of the song of Aligarh Muslim University, Aligarh was that we have to march ahead to diminish the darkness to become the torch bearers. The essense of the song was that the wife of a farmer requested her husband to bring her a 'Chunri' after sale of the harvest. C.S. Azad Univ. of Agrl. & Technology presented a fishermen's Folk Song, while the Haryana Agrl. University's presentation depicted Haryana as a fertile land and the simplicity of its people, language, food and clothes. Both the latter cited universities were selected as the best two.

The Theatrical events attracted maximum number of entries as almost all universities participated in one Act plays, Mime and Skits. Guru Nanak Dev University presented a lively play projecting the theme of Indian women's problem symbolically. The humorous presentation of M.D. University, Rohtak was commendable. Both the plays were declared as the best two. In skits, C.S. Azad Unlversity and Agra University stole the lime light, while Mime was claimed by M.D. University and C.S. Azad University.

A *special guest performance* was arranged during evening of the penultimate day in which youthful grand Kathak artist Madhukar Anand presented a treat to the audience. Santosh Kumar Nahar and Raj Kumar Nahar also presented jugalbandi on violin and tabla.

The Valedictory session was held at the Kailash Auditorium with Mrs. Ahmad, the wife of the Vice-Chancellor, as the Chief Guest. She gave away the prizes to the participants. A participation certificate and a Silver Medal were presented to each participant, while the contingent leaders were presented *mementoes. Eventwise trophies* were presented to various universities in the fields of Music, Dance, Theatre, Literary Activity and Fine Arts. The averall Championship was claimed by the C.S. Azad University of Agriculture and Technology, Kanpur. ☐

Inter-University North Zone Youth Festival 1988-89

RESULTS

(1) Music	
(a) ClassicalVocal Solo	C.S.A. University of Agril. & Technology, Kanpur. Punjabi University, Patiala.
(b) Calssical Instrumental Solo (Percussion)	Guru Nanak Dev University, Amritsar. University of Jammu, Jammu.
(c) Classical Instrumental Solo Non Percussion)	Agra University, Agra Punjabi University, Patiala.
(d) Light Vocal (Indian)	Punjabi University, Patiala. M.D. University, Rohtak.
(e) Western Vocal (Solo)	C.S.A. Univ. of Agril. & Technology, Kanpur. Aligarh Muslim University, Aligarh.
(f) Group Song (Indian)	C.S.A. Univ. of Agril. & Technology, Kanpur. Haryana Agril. University, Hisar.
(g) Group Song (Western)	C.S. Azad Univ. of Agril. & Technology, Kanpur. Dayalbagh Educational Instt., Agra.
(2) Dance	
(a) Folk/Tribal Dance	Haryana Agril. Univ., Hisar. C.S.A. Univ. of Agril. & Tech., Kanpur.
(b) Classical Dance	Punjabi Univ., Patiala. Agra University, Agra.
(3) Literary Event	
(a) Quiz	Agra University, Agra. Aligarh Muslim Univ., Aligarh.
(4) Theatre	
(a) One Act Play	Guru Nanak Dev. Univ., Amritsar. M.D. Univ., Rohtak.
(b) Skits	C.S.A. Univ. of Agril. & Technology, Kanpur. Agra Univ., Agra.
(c) Mime	M.D. Univ,, Rohtak. C.S.A. Univ. of Agril. & Technology, Kanpur.

(5) Fine Arts	
(a) Spot Painting	Aligarh Muslim Univ., Aligarh. University of Kashmir, Srinagar.
(b) Collage	C.S.A. Univ. of Agril & Tech., Kanpur. University of Jammu, Jammu.
(c) Poster Making	University of Jammu, Jammu. Jamia Millia Islamia, New Delhi.
(d) Clay Modelling	C.S.A. Univ. of Agril. & Tech., Kanpur. Thapar Instt. of Eng. & Tech., Patiala.
(e) Cartooning	Punjab Agril. Univ.; Ludhiana. Rohilkhand University, Bareilly
Champion	
Music	C.S. Azad Univ. of Agril. & Technology, Kanpur.
Dance	Haryana Agricultural University, Hisar.
Literary Event	Agra University, Agra.
Theatre	Maharshi Dayanand University, Rohtak
Fine Arts	C.S. Azad Univ. of Agril. & Technology, Kanpur.
Well disciplined team	University of Kashmir, Srinagar Rohilkhand University, Bareilly
Overall Champion	C.S. Azad University of Agril. & Technology, Kanpur.

SCIENCE AND SOCIETY

(*Continued from page* 9)

requisite blend of political will and professional skills to bring the benefits of the latest developments to the common man.

Of course, the very first requirement is Mass education. As Nehru said as far back as 1962, "you cannot have an illiterate nation having an industrial revolution."

Science should be diffused in comman man's language so that it can become a part of the social reality. We need to bring science out of the laboratories on to the market place, and to do that housewives and the poorly educated rural population need to be introduced to science through specially designed courses.

Media should be made aware of their role in popularising science and in achieving the aforesaid objectives. Media can play a pivotal role in imparting the scientific temper to the masses.

(ii) Science and society must serve each other and Man must be centre rather than the machine. Studies in science and technology must be complimented by studies in sociology. Such studies will provide the basic data regarding the possible lines along which S & T can help the Indian society to move ahead, the problems that might arise and how to deal with those problems with a scientific stand point.

(iii) Unless the social function of science and technology is given precedence over other uses to remove the drabness of the life of the human beings, the great truimphs of science in this century would remain meaningless.

The proponents of science and technology are also members of society and citizens of a country. Some of them will live in their own sheltered and ivory tower world which will be accepted by the society if their efforts push the frontiers of human knowledge. But, most others must take responsibility of applying their Professional skills to societal functions and needs which are heavily based on science.

(iv) Science and Technology must be monitored to play an essential role in day to day life and help in solving pressing national problems: drinking water, vaccinations, illiteracy and improved transport and telecommunication. Incidentally, these problems are also the main hurdles in the growth of S & T. The scientific community must examine the relevance of S & T programmes in the Indian context, and develop indigenous equivalents. Importing technology on a continuing basis is not the answer because a nation which continues to depend on second hand technology can never make the front-line.

(v) In the final analysis, given all the ingredients for progress, the pace and quality of progress will depend on the social management of scientific resources and the blending of these resources and ensuing technology in a manner that will generate symbiosis and social synergy to provide us a powerful motive force for the growth of our society in future in harmony with the world of homonized science.

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertation as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.00 a.m. to 5.30 p.m. Monday through Friday.

CURR[illegible]

A List of Select Articles culled from Periodicals received in the AIU Library during October, 1988

EDUCATIONAL PHILOSOPHY

Jenkins, David. What is the purpose of a university—and what light does Christian faith shed on this question? *Studies in Hr Edn* 13(3), 1988, 239-47.

EDUCATIONAL PSYCHOLOGY

Beswick, David and Ramsden, Paul. Curiosity and learning with understanding in the first year. *J Hr Edn* (Delhi) 13(1-3), 1987-88, 29-46.

Malik, J.S. Relationship between personality factors and teaching success in science. *Prog Edn* 63(3), 1988, 60-62.

Sarma, M.K. and Baruah, M.K. Distribution of intelligence among students pursuing different courses of higher education. *J Hr Edn* 10(3), 1985, 262-70.

EDUCATIONAL SOCIOLOGY

Altbach, Philip G. The foreign student dilemma. *J Hr Edn* (Delhi) 11(1 & 2), 1985-86, 89-110.

DRAFT NATIONAL Perspective Plan for women (1988-2000 A.D.) *New Frontiers Edn* 18(3), 1988, 98-161.

Sankaran Nair, V. The student community in pre-war Indian politics. *J Hr Edn* (Delhi), 10(3), 1985, 225-32.

Shamsuddin. Student indiscipline: Its cause and cure. *The Edn. Q.* XL(1), 1988, 21-3.

Sharma, R.R. Campuses of higher education: Genesis of unrest. *J Hr Edn* (Delhi), 11(1&2), 1985-86, 187-90.

EDUCATIONAL POLICY & PLANNING

Khullar, K.K. 1987—A year of education. *The Edn Q* XL(1), 1988, 1-5.

Mahanta, D. Coordinating education and development. *Yojana* 32(20), 1988, 12-18.

EDUCATIONAL ADMINISTRATION

Grossman, Robert J. The great debate over institutional accountability. *Coll Bd Rev* (147), 1988, 4-6, 38-42.

Higginson, J.H. Calcutta University Commission. *J Hr Edn* (Delhi) 10(3), 1985, 215-24.

Honig, Bill. The key to reform: Sustaining and expanding upon initial success. *Ednl Admn Q* 24(3), 1988, 257-71.

Padmanabhan, C.B. Orientation programmes in management of university finances. *J Hr Edn* (Delhi), 11 (1&2), 1985-86, 211-16.

CURRICULUM

Banerji, Meera and Krishna Mohan. General English syllabuses: A critical review. *J Hr Edn* (Delhi) 10(3), 1985, 233-43.

TEACHERS & TEACHING

Bhardwaj, K.S. Facilitative effects of Germane humour on learning. *Indian Ednl Rev* 23(1), 1988, 73-81.

Saxena, A.K. Training programme for college teachers. *J Hr Edn* (Delhi), 10(3), 1985, 273-83.

Weimer, Maryllen Gleason, and others. Instructional observation : Caveats, concerns and ways to compensate. *Studies Hr Edn* 13(3), 1988, 285-90.

EDUCATIONAL RESEARCH

Roy, S. and others. Evaluation research in education. *Edn Q* XL(1), 1988, 6-16.

EDUCATIONAL TECHNOLOGY

Ghani, Jawaid Abdul. Diffusion of microcomputers in an academic community. *Computer Edn* 12(4), 1988, 545-51.

EDUCATIONAL EVALUATION

Albert, D. Adjustable internal assessment. *J Hr Edn* 10(3), (Delhi) 1985, 286-90.

Doolittle, Allen E. and Cleary, T. Anne. Gender-based differential item performance in mathematics achievement items. *J Ednl Measurement* 24(2), 1987, 157-166.

Hassan, Parveen Akhtar. A paradigm for the success of semester. *J Hr Edn* (Delhi), 10(3), 1985, 290-91.

McMillan, James H. Beyond value-added education : Improvement alone is not enough. *J Hr Edn* (Ohio), 59(5), 1988, 564-79.

ECONOMICS OF EDUCATION

Bhaskara Rao, P. The UGC study centres : Nature and performance : A case study of Andhra University centre. *J Hr Edn* 10(3) (Delhi), 1985, 291-94.

Brouder, Kathleen. Encouraging families to save for college. *Coll Bd Rev* (147), 1988. 20-25.

Deousker, M. and Khare, H.P. Cost of higher education per student. *J Hr Edn* (Delhi) 10(3), 1985, 247-62.

Hansen, Janet S. Pay now. Go later : College prepayment and savings plans. *Coll Bd Rev* (147), 1988, 8-11, 25-29.

PHYSICAL EDUCATION & SPORTS

Haggerty, Terry R. Designing control and information systems in sport organizations : A cybernetic perspective. *J Sport Management* 2(1). 1988; 53-63.

VOCATIONAL EDUCATION

Kuppuswamy, G and Natarajan, R. Media in engineering education. *J Hr Edn (Delhi)* 11(1&2), 1985-86, 127-35.

Natarajan, R. Cybernetic considerations and engineering education. *J Hr Edn (Delhi)* 10(3), 1985, 169-75.

EDUCATIONAL JOURNALISM

Altbach, Philip G. The international dimensions of scholarly journals. *J Indian Edn* 13(6), 1988, 3-12.

Nanzhao, Zhou. International distribution of knowledge: A developing country perspective. *J Indian Edn* 13(6), 1988, 30-5.

LIBRARIES & BOOKS

Malhotra, Nirmal. Dissenting academics and their libraries. *J Hr Edn (Delhi)* 13(1-3), 1987-88, 134-8.

ADULT EDUCATION

Livneh, Cheryl and Livneh, Hanoch. Factors differentiating high and low participants in lifelong learning. *Ednl Psy Measurement* 48(3), 1988, 637-46.

DISTANCE EDUCATION

Chaudhary, Sohanvir. Distance education through television experience from the community viewing scheme. *New Frontiers Edn* 18(3), 1988, 85-91.

Samant, Chitta R. Open learning systems and educational mass media : An analysis. *J Hr Edn (Delhi)* 10(3), 1985, 283-86.

COMPARATIVE EDUCATION & COUNTRY STUDIES

Mathieson, Margaret and Bernbaum, Gerald. The British Disease : A British tradition ? *British J Ednl Studies* 36(2) 1988, 126-74.

Patel, Surendra J. The swift narrowing of the educational distance between the developed countries and the Third World : 1950 to 1981. *J Hr Edn (Delhi)* 10(3), 1985, 143-52.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

BIOLOGICAL SCIENCES

Biology

1. Bhadauria, Tuneera. *Ecology of earthworm in soil cosystems at higher elevation of Meghalaya.* NEHU. Prof P.S. Ramakrishnan, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

2. Sozhamannan, S. *Molecular and recombinant DNA analysis of the Rgl system : I-rgl B locus.* Madurai.

Biochemistry

1. Narasimham, P. Lakshmi. *Biochemical studies in Malignancy.* Osmania.

2. Ravinder Kumar. *Some biochemical factors affecting the regulation of starch and protein accumulation in the developing cereal grains.* PAU.

3. Ray, Amit. *Studies on a storage protein of Psophocapur tetragonolobus* Calcutta.

4. Singh, Jagdish. *Studies on active site groups and chemical reaction mechanism of isocitrate lyase of castor seedling endosperm (Ricinus communis).* BHU. Prof. O.P. Malhotra, Department of Biochemistry, Banaras Hindu University, Varanasi.

5. Sowbhagyalakshmi. *Biochemical parameters in cance of brest.* Bangalore, Dr. P S Veerabhadrappa, Prof, Department of Biochemistry, Central College, Bangalore.

Microbiology

1. Beri, Harinder Krishan. *Characterization of mycotoxic principles of selected molds isolated from dried, smoked and cured fish.* Panjab.

2. Bora, Lohit Chandra. *Studies on phylloplane microflora of mungbean. Vigna radiata (L.) Wilczek in relation to Xanthomonas campestris pv. vignaeradiatae dye.* HAU.

3. Dixit, Mayuri Krishnakant. *Surveillance of Neisseria meningitidis in Baroda (Gujarat).* Baroda.

Botany

1. Bandyopadhyay, Patralika. *Factors involved in the sex chromosomal and cytochemical changes in development of abnormal conceptuses.* Calcutta.

2. Gangwar, Lalta Prasad. *Salt stress physiology of a fodder legume berseem (Trifolium alexandrinum L.).* Rohilkhand. Dr K A. Varshney, Bareilly College, Bareilly.

3. Khare, Sunil Kumar. *Effect of thermal discharges and fly ash on the aquatic flora around Sarni and Koradi thermal power stations.* HS Gour. Dr. K.S. Unni, Department of Botany, Govt Post Graduate College, Chhindwara.

4. Mahajan, Nishikant Rajaram. *Studies in the flora of intertrappean series of India.* Nagpur. Dr. M.T. Sheikh, Department of Botany, Institute of Science, Nagpur.

5. Manimohan, P. *Taxonomic studies on Agaricales of Kerala.* Calicut. Dr. K.M. Leelavathy, Reader, Department of Botany, University of Calicut, Calicut.

6. Manjit Singh. *Effect of some metabolic inhibitors on the rooting response of hypocotyl cuttings of Phaseolus mungo and associated biochemical changes.* Punjab.

7. Mathew, Philip. *Floristic studies on the flowering plants of Nilambur.* Calicut. Dr. V.V. Sivarajan, Reader, Department of Botany, University of Calicut, Calicut.

8. Mitra, Sampa. *Pesticidal effects of biochemical defence of jute plants in relation to anthracnose disease.* Calcutta.

9. Mukhopadhyay, Maitreyi. *Cytomorphological studies on Vicia faba L. in in-vivo and in vitro conditions with special reference to the effect of the mutagenic agents.* Calcutta.

10. Muthuchelian, K. *Bioproductivity studies of some leguminous and non-leguminous plants in semi-arid ecosystem.* Madurai.

11. Narayanan Unni, P. *Studies on cecidozoan and cecidophytan galls of Malabar.* Calicut. Dr. V.J. Philip, Prof. Department of Botany, University of Calicut, Calicut.

12. Nayyar, Harsh Kumar. *Metabolic changes associated with elongation cotton fibres.* PAU.

13. Pratti Prasad. *Physiological and biochemical studies of nodulated and non-nodulated seedlings of pigeonpea, Cajanus cajan (L.) Millsp.* Andhra.

14. Raghuwanshi, Avadh Naresh. *Studies on orchids of North East India: Influence of ecophysiological factors on asymbiotic and symbiotic germination.* NEHU. Prof. R.R. Mishra, Department of Botany, North Eastern Hill University, Shillong and Dr. P Tandon, Department of Botany, North Eastern Hill University, Shillong.

15. Sandhu, Harjinder Singh. *Interspecific hybridization studies in genus Cyamopsis.* HAU.

16. Sandhu, Sardul Singh. *Epizootiological studies on Beauveria bassiana parasitizing Heliothis armigera Hub., pod borer of gram (Cicer arietinum Linn.).* Durgawati.

17. Shashi Bala. *Karyomorphologic and chemotaxonomic observations on Setaria.* PAU.

18. Shyam Sunder Rao, N.S. *Studies on macro-fungi of few forest localities of A.P., India.* Osmania.

19. Singh, Chandra Madhaw. *Biosystematic studies of some leguminous plants of Parasnath Hills.* Magadh.

20. Vaideshwara, T.S. *A survey of the anatomy of the Boronia leaf in relation to the taxonomy of the genus.* Bangalore. Dr. T. Ananda Rao, Karnataka Associate for the Advancement of Science, Central College, Bangalore.

21. Vallika Devi, K. *Ecosystem analysis of grasslands near Bhavnagar.* Bhavnagar. Dr. B.R. Pandit.

Zoology

1. Ataur Rahman. *Taxonomic studies on megachilid bees of Haryana.* HAU.

2. Biswas, Parthapratim. *Formation and function of Byssus apparents in selected bivalves of India.* Calcutta.

3. Nath, Bimalendu Bikash. *Studies on gene expression.* BHU. Prof. S C Lakhotia, Department of Zoology, Banaras Hindu University, Varanasi.

4. Pandian, R. Selvaraj. *Exogenous and endogenous components controlling the biting rhythm in a mosquito, Armigeres subalbatus (Coquillett).* Madurai.

5. Patel, Haresh Ramubhai. *Some observations on hormonal and neuronal regulation of preputial gland functions in male albino rats, Rattus norvegious albinus.* Baroda.

6. Ramani, N. *Studies on mites associated with economically important plants.* Calicut. Dr. M.A. Haq, Acarology Division, Department of Zoology, University of Calicut, Calicut.

7. Samuel, George. *Studies on the feeding and breeding biology of the catfish, Mystus seenghala in the natural waters of Punjab.* PAU.

8. Samuel, Thomas. *Field and laboratory studies on the persistence, binding and degradation of radiolabelled DDT and HCH in a sandy loam soil in India.* Delhi.

9. Sharma, Kaushal Kishore. *Field studies in birds: Environmental and physiological correlates.* BHU. Dr. Asha Chandola, Department of Zoology, Banaras Hindu University, Varanasi.

10. Sindhu Kumari. *Physiological studies on freshwater prawn (Macro-branchium nobilii Henderson and Mathai)* Madurai.

11. Singh, Sukh Mahendra. *In vitro activation of murine macrophages and lymphocytes with cisplatin, release of tumor cytolytic factors and their interaction with tumor cells.* BHU. Dr. Ajit Sodhi, Reader, Department of Zoology, Banaras Hindu University, Varanasi.

12. Singh, Usha Kiran. *Biochemical studies in developing rat brain during nutritional deprivation.* BHU. Prof. K.N. Agrawal, Department of Paediatrics, Institute of Medical Science, Banaras Hindu University, Varanasi.

Medical Sciences

1. Bhattacharyya, Kalpa. *Evaluation of Hibiscus rosa sinensis flower extract as an antifertility agent in laboratory mammals.* Calcutta.

2. Chandy, Thomas. *Fibrinogen-polymer interaction influence of plasma components.* Sree Chitra. Dr. C.P. Sharma, Head, Department of Bio-Surface, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

3. Mishra, Brahmeshwar. *Study of multiple emulsions as potential drug delivery system for prolonging the release of pentazocine.* BHU. Dr. J.K. Pandit, Department of Pharmaceutics, Institute of Technology, Banaras Hindu University, Varanasi.

Agriculture

1. Babura, Mungse Haribhau. *Seasonal variability in dry matter production, growth parameters and heat unit requirement in pearl millet (Pennisetum typhoides (Burm.) Stapf and Hubb.)* MP Agrl. Dr. D.G. Bhapkar, Ex-Advisor (Education), Maharashtra Council of Agricultural Education and Research, Agricultural College Compound, Pune.

2. Bhagawati, Promode Chandra. *Weed control studies in wheat under different levels of nitrogen.* HAU.

3. Boora, Khazan Singh. *Genotype and environments interaction, hybrid vigour and combining ability studies for yield and quality components in soybean, Glycine max (L) Merrill.* HP Krishi. Prof. L.N. Singh, Department of Plant Breeding, Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

4. Das, Rajendra Prasad. *Studies on weed control in grapes (Vitis vinifera L.) in vineyard and nursery.* HAU.

5. Dongre, Tanaji Krishnaji. *Studies on the host plant relationships of the spotted bollworm of cotton, Earias (Fabricius) vittella (Lepidoptera : Noctuidae).* MP Agrl. Prof. G.W. Rahalkar, Head, Pest Control Section, Bhabha Atomic Research Centre, Trombay, Bombay.

6. Kalita, Bhumidhar. *Spatial variability of some soil properties and productivity potential appraisal of an agricultural farm.* HAU.

7. Mohinder Paul. *Simulation approach for optimal allocation of water resources in a tract.* PAU.

8. Oraon, Paras Nath. *Success of cuttage in guava (Psidium guajava L).* Birsa Agrl.

9. Pandey, Dhirendra Kumar. *Studies on some important aspects of soil-plant sulphur.* BHU. Dr. R.C. Tiwari, Reader, Department of Soil Science and Agricultural Chemistry, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

10. Roy, Upendra Bahadur. *A study on yield gap and constraint analysis of rice crop in Ranchi District, Bihar.* Birsa Agrl.

11. Singh, Ashok Kumar. *Genetics of powdery mildew resistance and yield components in peas (Pisum sativum L).* BHU. Dr. J. Singh, Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

12. Singh, Kamleshwar. *Studies on the effect of P.G.R. and etiolation on propagation of guava (Psidium guajava L).* Birsa Agrl.

13. Singh, Narendra. *Effect of seed size, spacing, haulm cutting and growth regulators on seed potato, Solanum tuberosum L. crop cv. kufri badshah.* HAU.

14. Singh, Raj Kumar Somorjit. *Studies on blast disease of paddy and its control in Chota Nagpur, Bihar.* Birsa Agrl.

15. Subhadra. *Response of calli and whole plants to salt stress in different wheat genotypes.* HAU.

16. Thakur, Om Prakash. *Effect of manurial schedules on the incidence of stalk rot and economic characters in cauliflower.* YS Parmar. Dr. P.P. Sharma, Department of Vegetable Crops, College of Horticulture, Solan.

17. Yadwinder Singh. *Inter-relationship of stage of harvesting and time of storage on the composition, milling, cooking and nutritional quality of some high yielding rice varieties of Punjab.* PAU.

Animal Husbandry

1. Bhela, Sham Lal. *Studies on the effect of folligon chorulon and prid on plasma hormonal profile and ovarian cyclicity in postpartum anoestrous murrah buffaloes.* HAU.

2. Chand, Surendra. *Nutritional evaluation of neem seed meal in chicks.* Rohilkhand. Dr. V.R. Sadagopan, Indian Veterinary Research Institute, Izatnagar.

3. Chhabra Ashok Kumar. *Genetic analysis of sow productivity and preweaning traits in large white pigs.* Rohilkhand. Dr. S.S. Bhatia, Indian Veterinary Research Institute, Izatnagar.

4. Dhiman, Prem Chand. *A study of the dairy cattle and buffalo management practices and milk utilization pattern in the adopted and non-adopted villages in Hisar District.* HAU.

5. Nair, S. Prabhakaran. *Studies on foot and mouth disease virus, type Asia I and type O in cell culture systems and immune response of inactivated vaccines in sheep.* Rohilkhand. Dr. A.K. Sen, Indian Veterinary Research Institute, Izatnagar.

JAWAHARLAL NEHRU UNIVERSITY

NEW DELHI-110067

Advt. No. A&E-11/8/88

Applications are invited for the following posts :

1. **Assistant Director in Adul Continuing Education and Extension Unit (leave vacancy)** : E Q. : (a) a good academic record in the subject of Adult-Continuing Community/Extension/Education/Community Development from a recognised Indian University or an equivalent degree from a Foreign University; (b) M Phil or Ph.D. in a subject related to adult learning or Ph D. in a subject under Social or Education/Evidence of published learning materials and learning resources on areas listed in (a) above or published research in any of the relevant area/areas indicated above. **OR** (a) Good academic record in the subject of Social Sciences/Social Work/Humanities/Education/Sciences/Home Science; (b) Post Master's diploma in Adult and Continuing Education from a recognised Indian University or an equivalent diploma/degree from a Foreign University and (c) M.Phil or a Ph D. in a subject related to adult learning or a Ph.D. in a subject under Social Sciences or Education or Evidence of published learning materials and learning resources in adult continuing community/extension education/community development or published research in any of these area/areas. **D.Q.** : (a) A candidate holding a Ph.D./M.Phil degree should possess atleast a 2nd class Master's degree; **OR** A candidate without a Ph.D degree would possess a high second class Master's degree and second class in the Bachelor's degree; **OR** A candidate not possessing Ph.D. degree but possessing second class Master's degree should have obtained first class in the Bachelor's degree.

About five years experience of field work/teaching or research in a subject having bearing on Adult/Continuing Extension/Community/Non-Formal Education or Community Development. This condition may be relaxed on the recommendations of the Selection Committee.

(2) **Research Associate in Soviet Studies** : **E.Q.** : (a) A doctoral degree or research work of an equally high standard in Sovet Studies; (b) Good academic record with high 2nd class Master's degree in the relevant subject of Social Sciences. **D.Q** : Relevant published work of academic interest and working knowledge of Russian language.

(3) **Research Associate in Gulf Studies Programme** : **E.Q.** : (a) Ist or high 2nd class Master's degree in the field of Social Sciences or Modern Arabic/Persian literature or Islamic Studies; and (b) A Ph D. or published work of comparable merit in the field of West Asian Studies or Modern Arabic/Persian Literature.

Note : Candidates would give a synopsis of the Research Project that they would like to undertake relating to the Gulf area).

Scales of Pay

Assistant Director : Rs. 700-1600 (pre-revised)

Research Associates : Rs. 1200-1900 (pre-revised)

Category 'A' Rs. 2200-100-2700,
Category 'B' Rs. 2700-100-3200,
Category 'C' Rs. 3200-100-3700,
Category 'D' Rs. 3700-125-4325.

Age limit for Research Associates : 45 years for men and 55 years for women candidates. 10% of the posts of Research Associates are reserved for SC/ST candidates.

Application forms alongwith necessary details may be obtained free of cost in person or by sending a self-addressed envelope (23 cm × 10 cm) duly stamped, to the Deputy Registrar (Academic & Estt. II), Room No. 204-B, Administrative Block, Jawaharlal Nehru University, New Delhi-110067. The applications in the prescribed form complete in all respects duly forwarded by the competent authority (for those in service) should reach this University by **December 9, 1988.**

(Abbreviations—**EQ**=Essential Qualifications, **DQ**=Desirable Qualifications)

Indian Council of Medical Research

The Council proposes to appoint a **Senior Research Officer (Medical)** for the Hqs. Office of the Council, New Delhi.

Job Description : The incumbent will assist (i) in monitoring ongoing experimental and clinical studies on selected traditional remedies/medicinal plants in different parts of India. (ii) The managerial and technical aspects of research strategies of ICMR in the field of traditional medicine research.

Qualification and Experience

Essential : (i) MBBS from a recognised University with at least 8 years research experience on clinical and experimental evaluation of medicinal plants/traditional remedies in a reputed Teaching/Research Organization. (ii) In case of candidates possessing Doctorate or equivalent postgraduate degree in a bio-medical subject (Medicine, Paediatrics, Phamacology, Pathology and related discipline) and five years research experience preferably with reference to clinical and experimental evaluation of Medical Plants/Traditional remedies.

Desirable : A doctorate or equivalent postgraduate medical qualification.

Salary/Condition of Service : The scale of pay attached to the post is Rs. 3000-100-3500-125-4500 plus usual allowances as per Central Govt. Rules. Non-Practicing allowance is admissible to Medical Graduates only. as per rules of the Council. Private practice is not allowed. Benefits of pension admissible.

Age : Below 45 years. SC/ST candidates allowed relaxation in accordance with Government of India Rules.

Candidates called for interview will be paid 2nd class return fare on production of his/her travel vouchers/receipts.

Applications from employees working in Govt. Departments, Public Sector Organisations and Govt. funded Research agencies should be forwarded through proper channel.

Applications can be obtained from the office of the Director General, Indian Council of Medical Research, Post Box 4508, Ansari Nagar, New Delhi-110029 **on or before 15th December, 1988.** Forms duly completed should be sent to the Director General, Indian Council of Medical Research, Post Box 4508, Ansari Nagar, New Delhi-110029 with a crossed Indian Postal Order for Rs. 8/- payable to Director General, ICMR, New Delhi. SC/ST candidates are exempted from this payment. Incomplete and late application will not be entertained. Forms duly completed should reach the ICMR Office **on or before 26th December, 1988.**

Post Graduate Institute of Medical Education & Research, Chandigarh

CORRIGENDUM

The following modifications in item No. 11 of the admission notice No. 4/88 (Acad) of this Institute published in this paper on 19th September, 1988 for the seats of Senior Residents for D.M./M.Ch. courses for January, 1989 session are notified for the information of all concerned :

The number of seats for the courses will now be as under :

D.M. Courses

1. Cardiology —3
2. Clinical Pharmacology —2
3. Endocrinology —2
4. Gastroenterology —2
5. Nephrology — 1

M.Ch. Course

Urology —3

(i) Two seats in the subject of Cardiology and one seat each in the subjects of Clinical Pharmacology, Endocrinology, Gastroenterology and Urology are reserved for candidates belonging to Sch. Castes/Tribes.

(ii) There is no change in the number of Senior Residents notified in admission notice No. 4/88 (Acad) for M.Ch. courses for various categories in the subjects of Neuro-Surgery (1 open), Plastic Surgery (2 open and one reserved for Sch. Caste/Tribe) and Cardiovascular & Thoracic Surgery (2 open). The total number of vacancies of Senior Residents for D.M./M.Ch. courses in the various subjects for the said session will now be 19 instead of 17 as was previously notified.

(iii) Upper age limit on 1.1.89—Not more than 35 years for general candidates and 40 years for candidates belonging to Scheduled Castes/Tribes and also for ex-service men and commissioned officers including E.C.O./S.S.C.Os. released or being released on satisfactory completion of assignment. No upper age limit restriction for deputed/sponsored candidates.

(iv) Candidates due to appear in MD/MS examinations during November-December, 1988 can also apply. They will be admitted to the entrance test only if they supply the result of their examination from the Univesity concerned atleast two days before the entrance test.

(v) Applications for D.M. courses in the subjects of Cardiology, Clinical Pharmacology, Endocrinology, Gastroenterology and M.Ch. course in Urology are invited from candidates belonging to Scheduled Castes/Tribes and from general category candidates for D.M. course in Nephrology, on prescribed form. Candidates who have already applied in response to admission notice No. 4/88 (Acad.) need not apply afresh. Their previous applications will be considered except for D.M. (Nephrology) course.

Application form and detailed information are available from the office of the undersigned either personally on payment of Rs. 5/- at the counter from 11 AM to 12 Noon on all working days and 3 PM to 4 PM on all working days except Saturdays, or by post for which the request must be accompanied with a self addressed envelope (size 28 x 10 cms.) bearing postage stamps of Rs. 3.40 and crossed postal order for Rs. 5/- drawn in favour of the Director.

(vi) Those applying for the reserved seats must append with their applications a certificate from the District Magistrate concerned in support of their claim. No other certificate will be entertained.

(vii) The application must be accompanied with non refundable fee of Rs. 30/- in the form of postal order drawn in favour of the Director for each of the courses mentioned above. A candidate appplying of more than one subject is required to submit separate application, complete in all respects, for each subject.

CLOSING DATE FOR RECEIPT OF APPLICATIONS IS 24.12.88

CANCELLATION

It is notified for general information that the seat of Senior Resident for D.M. (Nephrology) course advertised in admission notice No. 4/88 (Acad.) published in this paper on **19th Sept. 1988** has been cancelled. The application fee of the candidates is being refunded.

REGISTRAR

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